

NEW BEES AND WASPS—Part IV

A New *Cerceris* Wasp, and some Small Chrysomelid Beetles

By TARTON RAYMENT, Melbourne

Superfamily: SPHECOIDES; Family: PHILANTHIDÆ.
CERCERIS ZIEGLERI, sp. nov.

TYPE: Female—Length, 11 mm. approx. Black and yellow; entirely coarsely punctured.

Head large, transverse; black; sub-quadrate; lateral face-marks large, lemon-yellow, semi-circular; frons rising to a sharply defined carina; clypeus lemon-yellow, a large mark laterally, a few stiff silvery hairs; supra-clypeal area with a short yellow line; vertex broadly-rounded, black, coarsely rugoso-punctate, a small spot of yellow laterally; compound eyes large, claret-brown; genae large, with a median yellow mark, coarsely punctured; labrum blackish-brown; mandibulae simple, yellow, black apically; antennae clear ferruginous beneath, scape black.

Prothorax large and black; coarsely rugoso-punctate; tubercles black; pleura black, coarsely rugoso-punctate. *Mesothorax* and scutellum longitudinally-coarsely rugoso-punctate, shining, black; postscutellum black, finely punctured; metathorax black, an area like an equilateral triangle enclosing fine radiating rugae, outside of the area coarsely rugoso-punctate; abdominal dorsal segments black, coarsely punctured, a few stiff silvery hairs; No. 1 with a large yellow mark laterally shading to red; 3-4 with hind margins broadly yellow; 6 with a broad oval bare plate; ventral segments black, a few stiff silvery hairs on margin; a mark of yellowish colour on sternites 1 and 5.

Legs reddish-yellow; coxae, trochanters and femora basally black; tarsi reddish-yellow; anterior pair with coarse "earth-rakes"; claws reddish; hind calcar finely serrated, reddish; tegulae polished, reddish shaded yellow. *Wings* dusky, especially in the large radial cell; nervures blackish-brown, strong; cells—the second cubital small, the intercubitus nervures uniting at the apex, the recurrent meeting at the middle of the base, pterostigma large and dark-brown, hamuli about fourteen but not strongly developed.

ALLOTYPE: Male—Length, 8 mm. approx. Superficially like the female.

Face entirely yellow, with a few stiff silvery hairs; frons excessively constricted, with the yellow carina of the female; clypeus with beautiful dense lateral fringes of golden hair on the anterior margin; mandibulae golden-yellow, black apically; antennae brighter ferruginous beneath, black scapes with a yellow dot.

Prothorax with two large yellow marks laterally; tubercles yellow. *Mesothorax*, scutellum and postscutellum similar to

female, but area of the metathorax not so defined. The propodeum black, and coarsely punctured (developed to a distinct cylindrical segment in both sexes). The apical plate coarsely punctured in the male. Ventral segments shining, coarsely punctured, with golden hind margins.

Locality—Emerald, Victoria (alt. 1,100 feet), Jan. and Feb., 1938, T. Rayment.

TYPE in the collection of the author.

Allies: *C. froggatti* R. Turn., which is larger, 18 mm., and of similar colouring.

The species is dedicated to John Ziegler, in appreciation of his hospitality and assistance during the study of these remarkable wasps. It had been intended by the author to append this paper to his *Notes on the Biology of Exoneura* (see *Vict. Nat.*, Vol. 62, p. 178—first par.), but, as material for two further papers on undescribed *Exoneura* species came along, he deemed it advisable first to have these published as a series.

Locality Notes

The Emerald district (Dandenong ranges) is 37 miles east of Melbourne, at an elevation of 1,100 feet, which is the highest point on the Gembrook narrow-gauge railway. The soil of the hills is a deep, rich-red loam of volcanic origin; in it are cultivated peas, beans, potatoes, strawberries and raspberries for the metropolitan market. The rainfall is heavy, and the temperatures mild, although snow is not unknown during winter months.

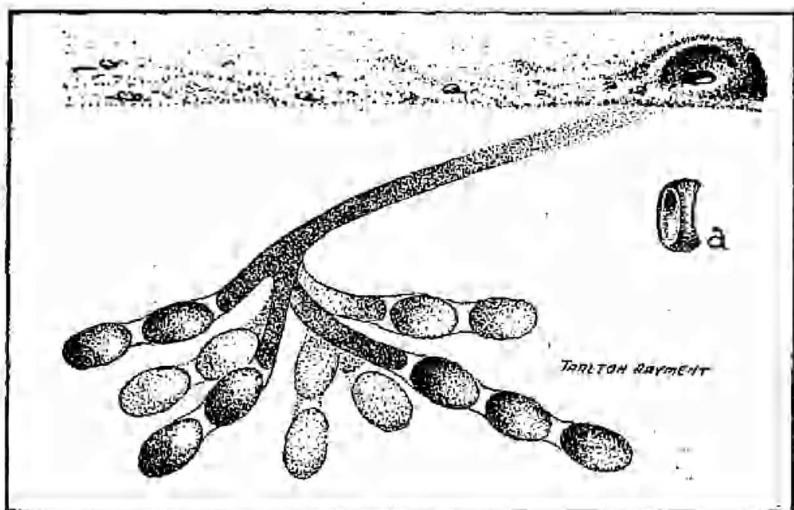
Apart from the main highway, the roads through the hills are often formed merely of the native soil, which consolidates under heavy traffic so thoroughly that plant-life cannot succeed, and, although in winter the hard crust softens into greasy red mud, yet it drains rapidly and the hard surface soon reappears in spring. The original forest of eucalypts was very dense, but has now been almost superseded by introduced plants, and the hilly landscape is no longer Australian in aspect.

*Architecture of the "Nesting" Shafts of *Cerceris zieglerei**

During January, 1938, my attention was drawn by John Ziegler, who has a house in the hills, to a number of small semi-circular "hoods" erected over the entrances to shafts in a bare roadway. Actual count revealed 57 shafts in an area of six feet square, so that the colony is an extensive one. The "hoods" all faced N.N.E., and are about half an inch in height, on a semi-circular base averaging three-quarters of an inch in diameter. Every opening revealed a round shaft going down at a low angle, and having a diameter of three-sixteenths of an inch. In no case was the deepest cell below nine inches.

Careful excavation showed the shaft sloping down at an angle of 35 degrees, for about six inches, when it branched radially. The radiating galleries at the base contained a pair of cells in five,

but, in one case, the sixth contained three-cells, each being half an inch in length at the long axis. The pairs were all separated by concave earthen plugs slightly less than one quarter of an inch in thickness. This "twin" arrangement of cells is so unusual among the *Hymenoptera* that the author searched the available literature for a similar construction, but the only record is the "nest" of an unknown species figured by Phil and Nellie Rau. Although these observers give only the figure of the twin-structure, without any other details, yet they describe the habits of many *Cerceris* wasps, and the remarkable twin-cells may have been the work of a species in this genus.

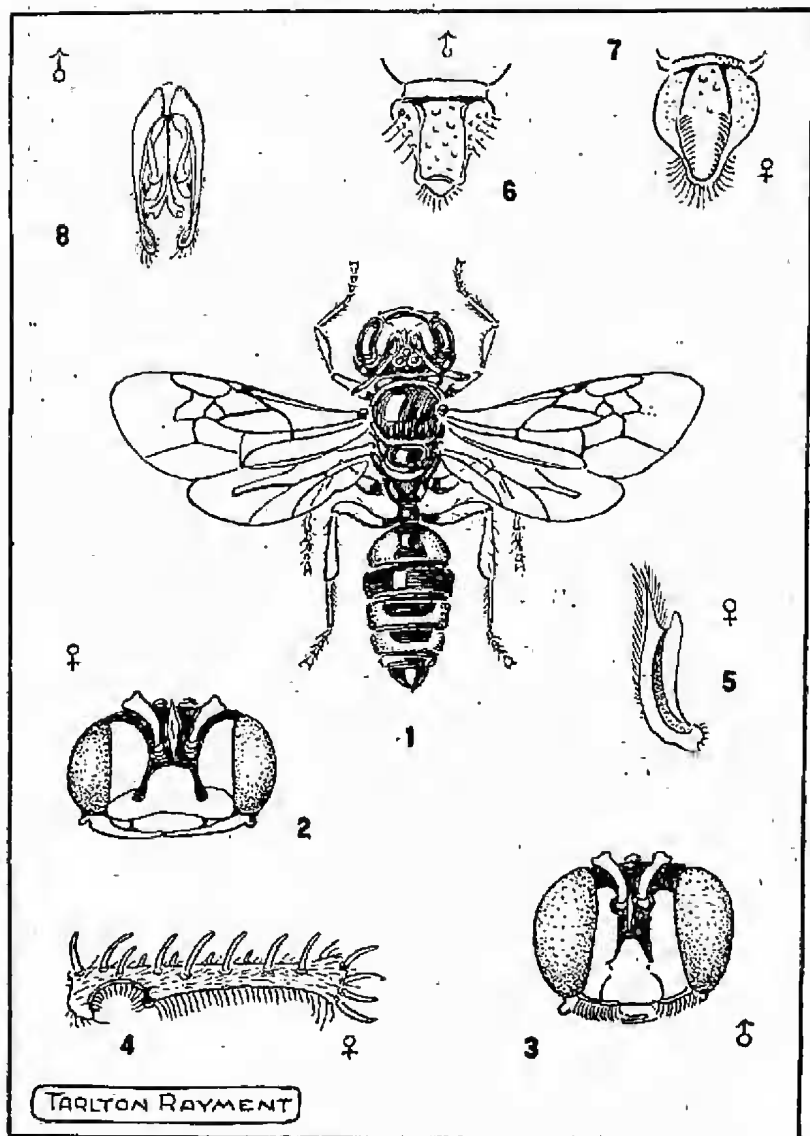


"Nesting" galleries of *Cerceris siegleri*, with shaft and "hood" over entrance. Fig. a—a bi-concave cell plug.

Larval Food

The cocoons were of silken thread, in which were incorporated traces of the red soil, and the dry elytra of many tiny beetles. Although only fragmentary remains are available for study, it is quite certain that the larvae were fed on Chrysomelid beetles, identified by F. E. Wilson as *Edusa perplexa*, which is often seen swarming on plants of the Bidgee-widgee (*Acana anserinifolia*); there were, in addition, elytra of two other species in the same genus. The beetles are less than one-eighth inch in length, and some exhibit the purplish-green iridescence of this family. Although it is difficult to be precise, yet it would appear that from 40 to 60 beetles are given to each larva.

The author was unable to ascertain whether or not the prey was merely paralysed by the foraging mother, or killed outright,



Cerceris siegleri (new species). Key on page 260.

before being placed in the cell; it would certainly seem that the beetles are killed outright, because such a number would surely take a day or two to collect, and the food is consumed as it is brought home. However, it is well known that fresh meat is favoured by other wasps for the feeding of the young. Moreover, there is no evidence that the full quota of beetles is placed in the cell before the egg is deposited, and the cell closed with an earthen plug.

Behaviour of the Individual

On extremely hot days, the wasps were observed bringing up the spoil from below, and, because of the tough nature of the ground, the pellets cohere easily. Since they are not cast away at a distance, after the manner of *Sphex* and *Bembex*, a hood is soon built up. Whether or not this protection is intended to act as a bad weather cowl cannot be ascertained, but it is clear that, since the heavy rains come from the south and the south-west, the north-east orientation most assuredly prevents the copious moisture from driving into a sloping shaft.

There is a strong flight of departing and homing females, and copulation of the sexes takes place close to the site of the colony soon after the females emerge from their natal cells. The author has some slight evidence that the deepest cells contain females, the others males. No eggs were discovered so early, for they are not deposited until towards the end of January.

When winter comes, only slight patches of the greyish subsoil mark the site of the "weather-hoods" of the industrious summer colony. Many specimens were collected on the wing, with a net, and others were taken from the interior of the shafts. The series was examined later by microscope, and the insects were determined as a species new to science.

KEY TO FIGURES

1. Adult male *Cerceris zieglerei*, sp. nov.
2. Head of female tipped back to show mandibles
3. Front of head-capsule of male.
4. Earth-rake on the front basitarsis.
5. Strigil or antennal-cleaner on the anterior leg.
6. Apical segment of male abdomen.
7. Apical segment of female abdomen.
8. Genitalia of the male.

A TAME LIZARD

In a Bayswater nursery we watched a small lizard wait quietly while the owner foraged among some flowerpots, a few yards away, for slugs. These he tossed to the lizard. Some were expertly caught in its open mouth. Others it picked up from the ground.—E.C.